

REMARKS

In the Office Action mailed November 24, 2003, in the above identified pending application, the examiner allowed applicants' claims 1-28, 33, 60-62, 64, 65, 67-73 and 85. Applicants' remaining pending claims 34-54, 56-59, 74-84 and 86-94 were rejected for alleged obviousness in view of several cited prior art references.

By this Response, applicants have amended independent claims 34 and 86 in a manner respectfully submitted to distinguish more clearly and patentably from the cited references.

With respect to parent claim 34, related dependent claims 35-51, 53-54, 56-59, and 84 remain pending in this application. Of these dependent claims, claim 46 has been amended to avoid duplication with claim 43, and claim 52 has been canceled to avoid duplication with claim 49.

With respect to parent claim 86, related dependent claims 87-88 and 90-94 remain pending in this application. Former dependent claim 89 has been canceled, and the limitations thereof re-written into claim 86 as now presented.

In addition, former independent claim 74 and its related set of dependent claims 75-76 have been canceled.

Multiple dependent claims 77 and 82 have been amended to delete dependency from now-canceled parent claim 74. Thus, claim 77 now depends from allowed claims 60, 64 and 69, whereby claim 77 and its related dependent claims 78-80 and 83 are now submitted for allowance. Also, claim 82 therefore now depends from allowed claims 1, 7, 60, 64 and 69, and further depends from amended claim 34 which is submitted for reconsideration and allowance as noted above. Claim 82 is therefore also submitted for allowance at this time.

Accordingly, by this Response, claims 34-51, 53-54, 56-59, 77-84, 86-88 and 90-94 are respectfully submitted for reconsideration and allowance together with already-allowed claims 1-28, 33, 60-62, 64, 65, 67-73 and 85, particularly for the reasons noted in the following remarks.

Brief Discussion of Telephone Interview

At the outset, applicants' undersigned counsel expresses appreciation for the opportunity to discuss the Office Action and references by telephone interview with Examiner White on January 28, 2004.

During the telephone interview, applicants' counsel and the examiner discussed proposed revisions to independent claims 34 and 86, primarily directed to inclusion of limitations from pending claim 89 into each of these two independent claims. In addition, the references cited in the recent Office Action to support rejection of claims 34 and 86 for obviousness were also discussed. Specifically, Sullivan, U.S. Patent 4,158,853, Balmat, U.S. Patent 5,713,799; and Masutani, U.S. Patent 5,651,741 were discussed in connection with the current rejections of claims 34 and 86 for obviousness.

Applicants' counsel argued that these references do not include the requisite teaching or suggestion to support the obviousness rejection. It is believed that the examiner understands and appreciates applicants' position, but the examiner declined to make any definitive commitment on allowability pending receipt and review of applicants' written response to the Office Action.

Applicants therefore submit this Response, noting that the arguments presented during the interview with respect to independent claims 34 and 86 are repeated herein.

Discussion of Claims 34 and 86 as Now Presented

In view of the claim cancellations and revisions as noted above, claims 34 and 86 constitute the sole remaining independent claims of this application which have not yet been allowed. Upon reconsideration and allowance of these claims 34 and 86, applicants respectfully submit that this application will be in formal condition for allowance.

Independent claims 34 and 86 are directed to applicants' golf ball flight monitor apparatus and system which utilizes a "camera" for capturing two or more post-impact images of a golf ball, for purposes of monitoring ball "spin" following impact of the ball with a golf club head. Such post-impact monitoring of ball spin can be extremely informative to an individual golfer for purposes of

correcting swing defects, and/or for aid in custom fitting one or more specific golf clubs to the individual golfer.

Claims 34 and 86 require the "golf ball" to have "at least one marking that is at least halfway circumambulatory" of the golf ball (claim 34), such as an "elongated stripe" (claim 86). The "camera" captures this "marking" or "stripe" in the post-impact images, and a "processor" determines ball spin from the "orientation and/or curvature" of the "marking" or "stripe" in those images. That is, the processor locates the marking or stripe on the ball in the successive post-impact images, and responds by automatically determining ball spin based on the "orientation and/or curvature" of the marking or stripe in the images.

Applicants respectfully contend that this concept, as clearly and definitively recited in independent claims 34 and 86 as now presented, is not found in or disclosed or suggested by the references cited by the examiner, whereby independent claims 34 and 86 are believed to in proper form for allowance.

Discussion of the Cited References

In the Office Action, the examiner has cited the Chang reference (U.S. Patent 5,342,054) as a primary reference for rejecting applicants' claims 34-54, 56-59 and 84 for obviousness. In this regard, the examiner has cited the Chang reference in combination with Sullivan, U.S. Patent 4,158,853 and Balmat, U.S. Patent 5,713,799.

The examiner has also cited the Sullivan '853 reference in combination with the Balmat reference or the Masutani reference (U.S. Patent 5,651,741) to support a rejection of claims 86-94 for obviousness.

The Chang reference is directed to a golf practice system which includes multiple cameras for monitoring a number of different golf swing and ball flight characteristics. However, Chang does not monitor ball spin. Based on the Chang reference, a person skilled in the art would not find the slightest suggestion regarding any apparatus or method for monitoring post-impact ball spin. Therefore, by itself, the Chang reference clearly does not support a rejection of applicants' independent claims 34 and 86.

The Sullivan '853 reference discloses another golf monitoring apparatus and system which, applicants concede, discloses one system and method for post-impact monitoring of ball spin. Sullivan uses multiple (three) cameras oriented on orthogonal axes for taking multiple post-impact images of a golf ball having multiple (three) circular spots or dots. As understood, Sullivan positions the three spots on orthogonal axes so that the three spots are always positioned respectively within the field of view of each of the three orthogonally mounted cameras (col. 1, lines 35-40). These camera images are analyzed, based on the locations of the spots, to derive information regarding ball spin.

While the Sullivan '853 reference includes an enabling disclosure limited to this multiple-camera, multiple-spot embodiment as described above, Sullivan's specification includes a broad-brush suggestion that a "single" camera might be used with the multi-spotted ball to still derive "limited" information regarding ball displacement and spin (col. 3, lines 45-54). The examiner has focused upon this broad-brush statement in Sullivan to support the rejection of applicants' claims for obviousness, contending that a person skilled in the art would find it obvious in view of Sullivan "to use only one camera" (Office Action, p. 3, line 7). Applicants respectfully note, however, that Sullivan does not provide any enabling disclosure to support this purported "single" camera embodiment. Applicants suggest that, in point of fact, a person skilled in the relevant art would not understand from Sullivan how or whether ball spin could indeed be monitored by use of a "single" camera and multiple spots on a golf ball.

Moreover, applicants note that the Sullivan '853 reference fails completely to disclose or suggest any ball monitor system using a "single" marking on the golf ball. Indeed, the examiner makes no attempt to assert that a combination "single camera – single marking" spin monitor system is disclosed or rendered obvious by Sullivan. Rather, the examiner asserts only that a "single camera" system is obvious in view of Sullivan. Clearly, nothing in the Sullivan reference remotely discloses or suggests that a "single marking" can be employed, or what configuration such "single marking" would take, or how a processor would respond to that "single marking" in order to derive meaningful ball spin information. Instead, Sullivan's teaching and disclosure is confined to multiple markings in the form of circular spots.

Applicants' independent claim 34 clearly differentiates from Sullivan by reciting "at least one marking" on the golf ball, wherein this "marking ... is at least halfway circumambulatory of the surface of said golf ball". In other words, the claimed "marking" on the golf ball is elongated, such as a stripe. This elongated "marking" on the golf ball thus presents a varying "angular" orientation (Specification, page 25, line 7), or a varying "rotated position ... as well as ... curvatures" (Specification, page 26, lines 13-14) utilized by the "processor" to determine post-impact spin "based on an automatic determination of at least one characteristic of only one of said markings" captured in the post-impact images. As now presented, claim 34 further requires "said at least one characteristic" to comprise "orientation and/or curvature of said marking".

Similarly, applicants' independent claim 86 clearly differentiates from Sullivan by requiring "an elongated stripe" on the golf ball, in combination with the "processor" for determining post-impact ball spin "based on at least one characteristic of the stripe ... including orientation and/or curvature of said stripe".

By contrast with the teachings of the Sullivan reference, applicants' claimed apparatus and system therefore utilizes a single elongated marking such as a stripe on the golf ball, and then responds to orientation and/or curvature of that single marking (stripe) as it appears in the succession of post-impact images to determine post-impact ball spin. The Sullivan reference, on the other hand, uses multiple cameras to track the positions of multiple circular spots or dots on the golf ball to derive post-impact spin information. Even if the Sullivan reference is construed to include a teaching to uses a single camera, Sullivan is still confined to the use of multiple circular spots or dots on the golf ball. The Sullivan reference does not disclose, suggest, contemplate, or in any way imply that a single elongated marking such as a stripe can be used to obtain post-impact ball spin information.

Applicants note that each of Sullivan's circular spots or dots formed on his golf ball will appear virtually the same in each post-impact image, namely, as a circular spot or dot. Thus, with respect to any single spot or dot used by Sullivan, that single spot or dot cannot be tracked with regard to angular or rotational "orientation and/or curvature" to derive any meaningful post-impact ball spin information.

Accordingly, it is clear that the Sullivan reference, even if construed to teach the use of a single camera for taking post-impact images of a golf ball, does not and cannot disclose or suggest applicants' claimed concept (as now recited in claims 34 and 86) wherein a single elongated marking or stripe on a golf ball is tracked relative to "orientation and/or curvature" to obtain post-impact ball spin information. Applicants therefore submit that claims 34 and 86 as now presented, together with their respective groups of dependent claims, are now in proper condition for allowance over any teaching or suggestion found in the Sullivan '853 reference.

Applicants note the examiner's additional citation of Balmat for its purported disclosure of a "circumambulatory marking" or "stripe". However, applicants respectfully contend that a person skilled in the art would find no teaching or suggestion in Balmat or Sullivan or any other cited reference of record to render applicants' claimed apparatus and system obvious under 35 USC 103.

The Balmat reference discloses a golf ball with an equatorial navigation stripe oriented at a right angle to a nonequatorial alignment stripe. These two stripes on Balmat's ball are designed for careful orientation when the golfer places the ball on a tee, so that the navigation stripe is aimed in the desired direction of ball travel, and the alignment stripe is oriented parallel to a properly addressed club head faceplate. Nothing in Balmat remotely discloses or suggests any utility of either stripe for any other purpose, and more particularly there is absolutely no disclosure or suggestion of using only one (but not both) of Balmat's stripes in a camera/processor apparatus and system for monitoring post-impact ball spin. Any such utility of the Balmat ball in this regard is apparent only after reading and understanding the invention described in applicants' patent application – this is a hallmark indicator of an improper rejection based on hindsight reasoning. Indeed, the examiner's conclusory statement, namely, that use of a stripe on the ball will allegedly "make detection of the marking easier; thereby improving the golf statistical analysis" (Office Action, page 4, line 2), is completely unsupported by any cited prior art reference. Where and how, applicants' ask, does any cited prior art reference disclose, suggest, or remotely intimate that a single "stripe" in lieu of multiple

circular spots would "make detection easier", or otherwise improve the "golf statistical analysis"?

Clearly, neither Sullivan nor Balmat discloses or suggests any apparatus or system for monitoring "orientation and/or curvature" of a single elongated marking or stripe on a golf ball to obtain post-impact ball spin information. Absent such teaching or suggestion in some prior art reference, the rejection is inherently and necessarily based in part upon the disclosure found in applicants' own patent application, and thus the rejection cannot stand.

The examiner has also cited the Masutani reference as another purported example of a golf ball bearing stripes, and reaches the same unsupported conclusion, namely, that use of stripe on the ball will allegedly "make detection of the marking easier; thereby improving the golf statistical analysis". Once again, however, any purported "stripes" on Masutani's ball are not provided for use with a camera/processor apparatus and system for monitoring post-impact ball spin, and any assertion by the examiner to that effect is again apparent only after reading and understanding the invention described in applicants' patent application. Moreover, applicants note that the purported "stripes" on Masutani's golf ball are not really stripes at all, but instead comprises a patent drawing rendition of a hologram and its associated visual interference pattern. Masutani's supposed invention relates to applying a hologram to a golf ball so that the shimmering or glittering interference pattern will make the ball easier to follow in flight, and easier to find in tall grass, etc. Applicants respectfully submit that a hologram and its inherent interference pattern would be likely to result in distorted or blurred images if one attempted to use Masutani's golf ball in applicants' post-impact ball spin application, whereby the hologram would in fact detract from image resolution and thereby result in poor quality information regarding ball spin.

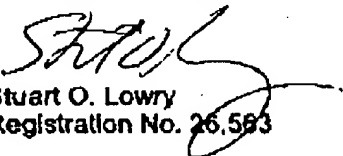
Accordingly, applicants respectfully argue that the invention as now recited in claims 34 and 86 is not rendered obvious by the Masutani reference, or any combination thereof with other references of record such as the Sullivan '853 reference.

Conclusion

In conclusion, in view of the foregoing claims revisions and accompanying remarks, applicants respectfully submit that all of the remaining claims 1-28, 33-51, 53, 54, 56-62, 64, 65, 67-73, 77-88 and 90-94 are in condition for allowance. A formal Notice of Allowance is believed to be in order, and is therefore respectfully requested.

Respectfully submitted,

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